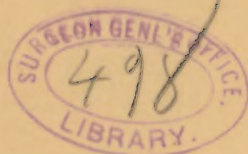


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SUBINVOLUTION OF UTERUS, AND ITS TREATMENT BY ELECTRICITY.¹

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Sir James Simpson's "Subinvolution;" Scanzoni's "Chronic Parenchymatous Metritis;" Klobes' "Habitual Hyperæmia, with Profuse Proliferation of Connective Tissue;" Edis' "Metritis;" Hodges' "Irritable Uterus;" Lisfranc's "Engorgement;" Kiwisch's "Infarctus," and Næggerath's "Diffuse Interstitial Metritis," or any other name that may describe the enlarged and engorged condition of the uterus only recalls to the practitioner, up to a few years since, the stubborn and unyielding condition he has to treat. To Sir James Simpson we are more indebted than to any other for accurately defining and calling attention to its frequency and treatment. One of the first to describe its macroscopical and microscopical appearance was Snow Beck in 1851.

Its ætiology is interesting in the extreme. Everything that could have been credited with producing a pathological condition of the pelvic organs has been claimed an exciting cause, but it seems that a large number of those cases coming under observation have followed abortions, lacerations, twin pregnancies, and similarly enlarged pregnant uteri (viz: large children, hydramnios, etc), and in those delicately constituted as to uterine development. This will cover a wide field; and to this might be added another very frequent cause, viz: the practice of using ergot at some time during labor, which stimulates the contraction of the unstriped muscular fibre, producing a quasi-tetanoid spasm of the uterus, which subsequently fails to contract sufficiently to induce involution. As to Histology: The bulk of the investigators concede that the uterus consists of unstriped muscular fibres in the highest state of development, varying in length from one-one-hundred-and-tenth to one-fortieth of an inch, as it is found in the unimpregnated or gravid state, also yellow elastic,

¹Read before the American Electro-Therapeutic Association at Apollo Hall, Chicago, September 14, 1893, at its annual meeting, Messrs. Lophthorn Smith, Hays and Massey, in discussion endorsed the paper.



fibrellar and homogeneous connective tissue, round spindle-shaped and irregular cells (Thomas' elementary fusiform fibre cells) serous membranes, mucous membrane, nerves, blood vessels and lymphatics.

During gestation, the muscle cells enlarge to ten times their size in the unimpregnated uterus. All the remaining anatomical structures of the uterus during gestation are enlarged. After parturition, the uterus should rapidly decrease, until in four to six weeks it has attained its normal size. This change is the result of the fatty degeneration of the muscular fibre, with the subsequent absorption of this fatty material, and its removal from the uterus. This is brought about by the impaired nutrition, the result of the chronic contraction of the unstripped muscular fibre, which contraction should be immediate and permanent after delivery, otherwise, the nutrition of the cells are not impaired, foundation for excessive amount of connective tissue is laid, and normal involution cannot obtain. As all writers recently have occasion to regret, pathology is very scanty on a disease which has had a recognized position in gynæcology for the last forty five years. It is evident to all observers that there is an excessive amount of tissue present in the uterus, and that there is also quite a defective condition of both the vascular and lymphatic systems. No clear and concise limits can be definitely fixed between the pathology of some forms of chronic metritis and subinvolution. Mary Putnam Jacobi, who, under a very careful study of the subject, found the muscular fibres enlarged, with nuclei disappearing, and smaller fibres with indistinct central nuclei; others still smaller in which the nuclei were distinct, while in another variety no nuclei were discovered, but granular and oil globules were found, and that the wasting of the cell began in the protoplasm and ended in the nucleus. She found among these fibres nucleated connective tissue cells and amorphous tissue. The blood vessels and lymphatic were very much enlarged and intimately connected with the muscular tissue, which she considers a strong diagnostic point from chronic metritis, as herself and De Sinety have shown in the latter a perivascular condition is present. Its diagnosis is generally easy, when we remember that an abortion or pregnancy must be present as a starting point. Hanson finds that involution extends over a period of twelve weeks, but that in two-thirds of the cases the uterus has returned to normal in from six to ten weeks. Weakness of the back, excessive lochial discharge, or the appearance of menorrhagia may be the most important symptoms found during the puerperium. Evidently in the first stage, we have hyperæmia and

congestion. A large flabby uterus, with thickness of walls increased and the sound reveals an enlarged uterine cavity; the mucous membrane bleeds freely. Whether this be chronic metritis or subinvolution uteri following abortion or confinement, matters little in the treatment.

As to treatment: that, other than electricity, will only lightly be touched upon. As prophylactic clearing well the uterus of clots, the use of weak antiseptic vaginal injections, refraining from use of ergot, or any of its kindred drugs at any time in labor, or, if used during labor, to be continued for several days after labor at suitable times to induce and maintain contraction of unstriped muscular fibre, and to induce physiological mal-nutrition, so necessary for the fatty degenerative process common in normal involution. Tonics, baths and drugs, hastening abortion, with nutritious diet will accomplish much in building up the system. Vaginal injections of hot water 110 or 115°, using three or four gallons once daily, with pledgets of cotton every third night, inserted up the vagina, saturated with anhydrous glycerine and boro-glyceride, with the application of iodized phenol on a cotton wrapped probe, or, better still, by a few drops injected into the cavity of the uterus with an intra-uterine syringe, provided the os is patulous, will all hasten the cure. If the os is very much congested, a Buttle scarificator plunged into the cervix and the congestion relieved in this way will do much good toward aiding a cure. But the greatest amount of good can be accomplished in the least time by the proper application of electricity. The detection of subinvolution is generally not accomplished as early as the tenth day, from the fact that any symptoms referable to this is not generally attributed to this cause, but if it is detected at so early a stage, that is, at ten days, and the intra-uterine dimensions is found to be ten centimetres, and much tenderness does not exist, we should use the Medium Engleman Coil, having a length of 200 metres and a diameter of seven millimetres, with the bipolar vaginal electrode, after the manner suggested by Apostoli, using as powerful current as the patient is able to stand to accomplish the object. This to be continued for five minutes, then to be discontinued for ten minutes, with the electrode in same position, when the current should be re-applied for a period corresponding for same time, when the electrode should be removed. If a more powerful effect is desired, the intra-uterine bipolar method should be tried, having the proximal pole of the intra-uterine electrode stop at the os and the distal as far toward the fundus as it will reach, pressing it alternately to posterior,

anterior and lateral portions of uterus. This is to be used with Engelman's coarse coil, having a diameter of one-fourth millimetres and a length of sixty-six metres, with a strong current. But in failing to effect involution in this manner, as will often be the case, owing to such a sensitive condition of parts, or to the infiltration of tissue being so abundant and so organized as to preclude any certain results from the treatment, we must adopt another. The writer is mainly influenced by Hansen's observations as to diagnosis of subinvolution, and if there is found at the second week a uterus varying from eight to thirteen centimetres, at third week from seven and five-tenths to ten and five-tenths, and at the fourth week from seven to nine centimetres, and fifth week from six to nine centimetres, it is concluded subinvolution is to be dealt with; and, provided symptoms are present as above described, the case is treated on a different plan, by aiming, first, to reduce the engorged and congested condition; secondly, to absorb hyperplastic elements, and, thirdly, to restore tone to muscular and vascular structures. This consists of, first, positive galvanic intra-uterine application of at least thirty milliamperes from eight to ten minutes, and if much tenderness exists and pain is induced, to be followed by the vaginal bipolar application of the faradic current from a coil having a diameter of .225 millimetres, and having a length of 600 metres, after the method as described by Engleman. By this means the uterus is relieved of engorgement, the unstriped muscular tissue composing the uterine walls are strengthened, and the walls of the blood vessels are restored to their normal contractile powers. The capillaries are relieved of their hyperæmic condition, and the process of involution is in every way aided. Bipolar intra-uterine faradization must be carried out to be effective in this instance by the bipolar intra-uterine sound.

If the subinvolution has passed the stage of active congestion involution may be hastened by using the negative pole of the galvanic current—intra-uterine—especially if the uterus presents a hardened condition. In several instances in which ergot was freely used during labor, the author has used the daily application of the faradic current to uterus for seven or eight days, as used by Trippier and Apostoli, of Paris, and in each instance with the happiest results, and is of the opinion that this should be used in all cases where ergot has been freely used during labor; strict antisepsis being carried out in each instance.

By this method described, the conclusion is reached that subinvolution uteri can be cured in one-half of the time consumed by any other means than electrical.

